



Europäisches Patentamt
European Patent Office
Office européen des brevets



Publication number: **0 520 399 A3**

EUROPEAN PATENT APPLICATION

Application number: **92110618.3**

Int. Cl.⁵: **B41J 2/16, B23P 19/00, B23P 19/04**

Date of filing: **24.06.92**

Priority: **25.06.91 JP 153010/91**
25.06.91 JP 153012/91
25.06.91 JP 153013/91
25.06.91 JP 153014/91
25.06.91 JP 153009/91
26.06.91 JP 154384/91
09.07.91 JP 167907/91

Date of publication of application:
30.12.92 Bulletin 92/53

Designated Contracting States:
AT BE CH DE DK ES FR GB GR IT LI LU NL SE

Date of deferred publication of the search report:
25.08.93 Bulletin 93/34

Applicant: **CANON KABUSHIKI KAISHA**
30-2, 3-chome, Shimomaruko, Ohta-ku
Tokyo(JP)

Inventor: **Inaba, Masaki, c/o Canon Kabushiki**
Kaisha
30-2, 3-chome, Shimomaruko

Ohta-ku, Tokyo(JP)
Inventor: **Baba, Tsuyoshi, c/o Canon**
Kabushiki Kaisha
30-2, 3-chome, Shimomaruko
Ohta-ku, Tokyo(JP)
Inventor: **Orikasa, Tsuyoshi, c/o Canon**
Kabushiki Kaisha
30-2, 3-chome, Shimomaruko
Ohta-ku, Tokyo(JP)
Inventor: **Ohba, Takashi, c/o Canon Kabushiki**
Kaisha
30-2, 3-chome, Shimomaruko
Ohta-ku, Tokyo(JP)
Inventor: **Tsuda, Toshio, c/o Canon Kabushiki**
Kaisha
30-2, 3-chome, Shimomaruko
Ohta-ku, Tokyo(JP)

Representative: **Pellmann, Hans-Bernd,**
Dipl.-Ing.
Patentanwaltsbüro, Tiedtke-Bühling-Kinne &
Partner, Bavariaring 4
D-80336 München (DE)

Ink-jet head assembling method and apparatus.

Disclosed is an ink-jet head assembling method maintaining the gap between a top plate and fingers, executing alignments between the top plate and the heater board. The method comprises holding the top plate by the fingers 26b and 26c, moving the fingers to bring the top plate 104 to a position above the heater board 102 with adhesives 80a and 80b, releasing the holding of the fingers 26b and 26c enabling them to engage an ink reception port 118 of the top plate 104, and moving the fingers 26b and 26c sideways to abut against the ink reception port 118, adjusting a relative position between heaters 112 of the heater board 102 and nozzles 106 of the top plate 104.

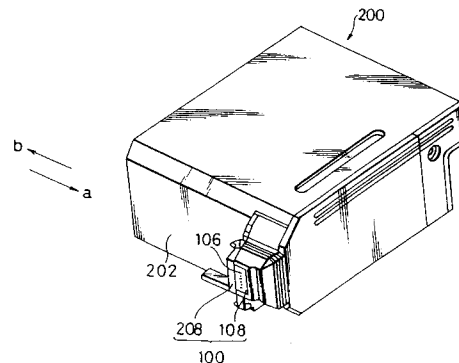


FIG. 1

EP 0 520 399 A3



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
P,X	EP-A-0 483 843 (CANON K.K.) * the whole document *	1,2,12, 13,16- 20	B 41 J 2/16 B 23 P 19/00 B 23 P 19/04
X	HEWLETT PACKARD JOURNAL no. 4, August 1988, PALO ALTO, CA, USA pages 32 - 40 BOELLER ET AL. 'High-Volume Microassembly of Color Thermal Inkjet Printheads and Cartridges' * the whole document *	1,2,12, 13,16- 20	
X	HEWLETT-PACKARD JOURNAL vol. 39, no. 5, October 1988, PALO ALTO, CA, USA pages 91 - 98 , XP000112572 HUTH ET AL. 'CIM and Machine Vision in the Production of thermal Inkjet Printheads' * the whole document *	1,2,12, 13,16- 20	
A	EP-A-0 015 618 (LEUVEN RESEARCH AND DEVELOPMENT V.Z.W.) * page 5, line 2 - page 7, line 7; figure 2 *	1,2,12, 13,16- 20	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
P,X	US-A-5 098 503 (DRAKE) * column 5, line 36 - column 6, line 55; figure 3 *	16-20	B 41 J B 23 P
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 04-03-1993	Examiner JOOSTING T E D
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			



CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid,
namely claims:
- No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions,
namely:

See sheet -B-

- All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid,
namely claims:
- None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims.

namely claims: 1, 2, 12, 13, 16-20



LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1,2,12,13,16-20 : Assemble by translation and thickness calibration.
2. Claims 3,4 : Assemble by adhesive and fix spring.
3. Claims 5,6,7,14,15 : Assemble by rotation and alignment.
4. Claims 8-11 : Assemble by comparing 2 photo images.